

AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

WHAT IS CLAIMED IS:

1. – 29. (Cancelled)

30. (New) A quadrature mixer arrangement for converting a first signal at a first frequency to a second signal at a second frequency, the arrangement having a first mixer operatively coupled to a first and a second terminal, wherein the first terminal is a positive radio-frequency terminal and the second terminal is a negative radio-frequency terminal; and a second mixer coupled in parallel with the first mixer and operatively coupled to the first and second terminal, wherein the first mixer is arranged to be conductive for a first and/or a second state of a first mixing signal, and arranged to mix the first signal with the first mixing signal to provide the second signal; and the second mixer is arranged to be conductive for a first and/or a second state of a second mixing signal, and arranged to mix the first signal with the second mixing signal to provide the second signal. the arrangement comprising:

a set of switch devices provided in the signal path between the mixers and the first and second terminals, wherein switch devices coupled to the first mixer are arranged to be conductive for the first and/or second state of the second mixing signal, and switch devices coupled to the second mixer are arranged to be conductive for the first and/or the second state of the first mixing signal.

31. (New) The arrangement according to claim 30, wherein the first and second mixing signals are first and second local oscillator (LO) signals (LO₁, LO₀) and/or their inverse signals, having a common frequency and first and second phases, which are phase shifted $\pi/2$ radians in relation to each other.

32. (New) The arrangement according to claim 30, wherein the first and second mixer comprise a set of mixing means, each of the mixing means having a first, second, and third terminal, the first mixer adapted to be driven by the first mixing signal

being an LO signal and/or its inverse signal having first and third phases received at the third terminals of the mixing means of the first mixer, and the second mixer adapted to be driven by the second mixing signal being a second LO signal and/or its inverse signal having second and fourth phases received at the third terminals of the mixing means of the second mixer.

33. (New) The arrangement according to claim 32, wherein in each of the mixers' first terminals of a first and a third mixing means of the set of mixing means are operatively coupled to the first terminal of the arrangement and second terminals of the first and third mixing means are coupled to first terminals of a second and a fourth mixing means of the set of mixing means, second terminals of the second and fourth mixing means are operatively coupled to the second terminal of the arrangement, and wherein IF terminals are provided at the second terminals of the first and third mixing means.

34. (New) The arrangement according to claim 33, wherein the mixing means are provided by transistors, and wherein the first and fourth mixing means of the first mixer are adapted to be driven by the first mixing signal, the second and third mixing means of the first mixer are adapted to be driven by the inverse signal of the first mixing signal, and wherein the first and fourth mixing means of the second mixer are adapted to be driven by the inverse of the second mixing signal, the second and third mixing means of the second mixer are adapted to be driven by the second mixing signal.

35. (New) The arrangement according to claim 34, wherein in each mixer first and third switch devices are provided in the signal path between the first terminal of the first and third mixing means and the first terminal of the arrangement, and second and fourth switch devices are provided between the second terminals of the second and fourth mixing means and the second terminal of the arrangement.

36. (New) The arrangement according to claim 35, wherein the first and fourth switch devices coupled to the first mixer are adapted to be driven by the second mixing signal, the second and third switch devices coupled to the first mixer are adapted to be driven by the inverse signal of the second mixing signal, the first and fourth switch devices coupled to the second mixer are adapted to be driven by the first mixing signal, and the second and third switch devices coupled to the second mixer are adapted to be driven by the inverse signal of the first mixing signal.

37. (New) The arrangement according to claim 30, wherein the set of switch devices is provided by transistors.

38. (New) The arrangement according to claim 30, wherein the mixers and/or the set of switch devices comprise a voltage controlled switch.

39. (New) The arrangement according to claim 30, wherein the mixers and/or the set of switch devices comprise FET transistors.

40. (New) The arrangement according to claim 39, wherein the FET transistors are provided in CMOS technology.

41. (New) The arrangement according to claim 30, wherein the arrangement is provided as a transmitter mixer, the first signal is a quadrature IF signal to be received as an input signal, and the second signal is an RF signal to be provided as an output signal.

42. (New) The arrangement according to claim 30, wherein the arrangement is provided as a receiver mixer, the first signal is an RF signal to be received as an input signal, and the second signal is a quadrature IF signal to be provided as an output signal.

43. (New) The arrangement according to claim 30, implemented in a wireless communication device having a communication interface for wirelessly communicating with a remote communication device.

44. (New) The arrangement of claim 43, wherein the device is one selected from the group consisting of a portable radio communication equipment, a mobile radio terminal, a pager, a communicator, an electronic organizer, and a smartphone.

45. (New) The arrangement according to claim 43, wherein the device is a mobile telephone.

46. (New) A method of mixing signals for converting a first signal at a first frequency to a second signal at a second frequency having the steps of receiving the

first signal; mixing the first signal in a mixer arrangement comprising a first and a second mixer coupled in parallel to provide the second signal, each mixer being coupled to a first and a second terminal, wherein the first terminal is a positive radio-frequency terminal and the second terminal is a negative radio-frequency terminal, by controlling the first mixer to be conductive for a first and/or a second state of a first mixing signal for mixing the first signal with the first mixing signal to provide the second signal; and controlling the second mixer to be conductive for a first and/or a second state of a second mixing signal for mixing the first signal with the second mixing signal to provide the second signal, comprising the step of:

controlling a set of switch devices provided in a signal path between the mixers and the first and second terminals to operatively couple either the first or the second mixer to the first and second terminals by controlling switch devices coupled to the first mixer to be conductive for the first and/or the second state of the second mixing signal; and controlling switch devices coupled to the second mixer to be conductive for the first and/or the second state of the first mixing signal.

47. (New) The method according to claim 46, wherein the first and second mixing signals are first and second local oscillator (LO) signals, and/or their inverse signals, having a common frequency and first and second phases, which are phase shifted $\pi/2$ radians in relation to each other.

48. (New) The method according to claim 46, comprising the steps of providing a set of mixing means in each of the first and second mixer, wherein each of the mixing means has a first, second, and third terminal, driving the first mixer by using the first mixing signal being a first LO signal and/or its inverse signal having first and third phases received at the third terminals of the mixing means of the first mixer, and driving the second mixer by using the second mixing signal being an LO signal and/or its inverse signal having second and fourth phases received at the third terminals of the mixing means of the second mixer.

49. (New) The method according to claim 48, further comprising the steps of for each of the mixers operatively coupling a first terminal of a first and a third mixing means of the set of mixing means to the first terminal of the arrangement and a second terminal of the first and third mixing means to first terminals of a second and a fourth mixing means of the set of mixing means, operatively coupling a second terminal of the

second and fourth mixing means to the second terminal of the arrangement, and providing IF terminals at the second terminals of the first and third mixing means.

50. (New) The method according to claim 49, further comprising the steps of providing the mixing means as transistors, driving the first and fourth mixing means of the first mixer by using the first mixing signal, driving the second and third mixing means of the first mixer by using the inverse signal of the first mixing signal, driving the first and fourth mixing means of the second mixer by using the inverse of the second mixing signal, and driving the second and third mixing means of the second mixer by using the second mixing signal.

51. (New) The method according to claim 50, comprising the steps of for each mixer providing the first and third switch devices in the signal path between the first terminal of the first and third mixing means and the first terminal of the mixer arrangement, and second and forth switch devices between the second terminals of the second and fourth mixing means and the second terminal of the mixer arrangement.

52. (New) The method according to claim 51, comprising the steps of driving the first and fourth switch devices coupled to the first mixer by using the second mixing signal, driving the second and third switch devices coupled to the first mixer by using the inverse signal of the second mixing signal, driving the first and fourth switch devices coupled to the second mixer by using the first mixing signal, and driving the second and third switch devices coupled to the second mixer by using the inverse signal of the first mixing signal.

53. (New) The method according to claim 46, comprising the step of providing the switch devices by means of a transistor.

54. (New) The method according to claim 46, comprising the step of providing the mixers and/or the switch devices as a voltage controlled switch.

55. (New) The method according to claim 46, comprising the step of providing the mixers and/or the switch devices by FET transistors.

56. (New) The method according to claim 55, comprising the step of providing the FET transistors by using CMOS technology.

57. (New) The method according to claim 46, comprising the step of providing the arrangement as a transmitter mixer, the first signal being a quadrature IF signal, and the second signal being an RF signal.

58. (New) The method according to claim 46, comprising the step of providing the arrangement as a receiver mixer, the first signal being an RF signal, and the second signal being a quadrature IF signal.